UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,527	01/23/2006	Nikolai Alekseevich Baranov	48747003	2442

27123 7590 04/08/2008

MORGAN & FINNEGAN, L.L.P.
3 WORLD FINANCIAL CENTER
NEW YORK, NY 10281-2101

EXAMINER	
LATHAN JR, QUINTIN JEROME	

ART UNIT	PAPER NUMBER
4193	

NOTIFICATION DATE	DELIVERY MODE
04/08/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOPatentCommunications@Morganfinnegan.com
Shopkins@Morganfinnegan.com
jmedina@Morganfinnegan.com

Office Action Summary	Application No.	Applicant(s)	
	10/565,527	BARANOV ET AL.	
	Examiner	Art Unit	
	QUINTIN LATHAN JR	4193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *24-29* is/are allowed.

6)☒ Claim(s) *17,18 and 20-23* is/are rejected.

7)☒ Claim(s) *19 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *08/07/2006 and 01/23/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 17,19,and 24, objected to because of the following informalities: The language "capable of" is suggested to change to "is", or the like . Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 17-18 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tingleff et al (US Patent 4424038) in view of Zheng et al. (US Patent 6184816).

As per Claim 17, 20 and 22 , Tingleff et al. teach Flight simulator for training the pilots conditions, the flight simulator comprising:

a module (1) for control of the simulator modes (to prepare a training scenario, a file is placed in a memory of the simulator for the flight to be simulated)(col. 4, lines 8-10)

capable of choosing a training scenario and controlling operation of the simulator modules,

a training scenarios database (as mentioned previously an almost infinite variety of training scenarios my be created)(col. 6, lines 11-14) module (2)

a module (3) for commutation of the simulator (to prepare a training scenario, a file is placed in a memory of the simulator for the flight to be simulated)(col. 4, lines 8-10) modules,

a module (4) (fig 2., element sensor, is real-time)for imitation of outside visual situation, visual part of the air space and ground surface in real time,

a module (6) for simulation of the pilot workplace(to prepare a training scenario, a file is placed in a memory of the simulator for the flight to be simulated)(col. 4, lines 8-10) ,

a module (5) (fig.2 , element control panel switches) for simulation of the aviation instrument panel with indication of the of aircraft engine modes,

a module (8) (fig.2, element control panel) for simulation of the controls for the aircraft units and systems,

a module (7) (fig. 2, element attitude and velocity) for simulation of the ambient parameters,

a module (11) for simulation of the aircraft dynamics (to prepare a training scenario, a file is placed in a memory of the simulator for the flight to be simulated)(col. 4, lines 8-10) capable of forming signals imitating the aircraft forces and moments according to the training scenario, and transmitting the signals to the module (6) for simulation of the pilot workplace, module (5) for simulation of the aviation instrument panel, and module

(4) for imitation of outside visual situation on the basis of information from the module, from the training scenarios database module (2), and from the module (8)for simulation of the controls for the aircraft units and systems,

a system for evaluation of the pilot actions (Actions of the pilot and other air crewmen responsive to the training scenario are recorded for evaluation after the training flight)(col. 4, lines 1-3) capable of estimating correctness of the pilot actions against the flight situation hazardous for the aircraft on the basis of information received from the module (4) for imitation of outside visual situation and the module (5) for simulation of the instrument panel.

Tingleff et al. did not teach a aircraft system including a module (9) for simulation of the wake vortex situation capable of determining the vortex generator wake vortex path as the set of the vorticity region centers and intensity on the basis of information from the training scenarios database module (2) and of information from the module (7) for simulation of the ambient parameters,

a module (10) for simulation of wake vortex perturbation effects on the aircraft capable of evaluation of the aircraft additional forces and moments induced by the vortex generator wake vortices on the basis of information on the wake vortex path and intensity received from the module (9) for simulation of the wake vortex situation, of information on the aircraft parameters received from the training scenarios database module (2), and of information on the aircraft position, flight velocity, angular rates, and geometrical characteristics received from the module (11) for simulation of the aircraft dynamics,

Zheng et al teach a simulation containing a module (9) for simulation of the wake vortex situation capable (this information is combined or utilized on board the aircraft to develop a real-time airborne model of where these hazardous phenomenon (vortex) are likely to be encountered) (col. 7, lines 29-32) of determining the vortex generator wake vortex path as the set of the vorticity region centers and intensity on the basis of information from the training scenarios database module (2) and of information from the module (7) for simulation of the ambient parameters,
a module (10) for simulation of wake vortex perturbation effects on the aircraft (the terrain data may be used by the predictive modeling s)capable of evaluation of the aircraft additional forces and moments induced by the vortex generator wake vortices on the basis of information on the wake vortex path and intensity received from the module (9) for simulation of the wake vortex situation, of information on the aircraft parameters received from the training scenarios database module (2), and of information on the aircraft position, flight velocity, angular rates, and geometrical characteristics received from the module (11) for simulation of the aircraft dynamics,
It would have been obvious for some one skilled in the art at that the time of the invention to include a simulation of a vortex situation in the system as taught by Zheng et al. for the purpose of enhancing the capability of Tingleff et al. for accepting additional flying simulation parameters base on weather conditions such as turbulences.

As per claim 18, Tingleff et al teach simulator wherein said module (6) for simulation of the pilot workplace is made with a possibility of changing its attitude (the pilot of the

aircraft, and other cooperating crewmen will make course changes, altitude changes)(col. 3, lines 51-53) and is equipped with the device for dynamic imitation of flight.

As per claim 21, Tingleff et al teach simulator wherein said training scenarios (as mentioned previously an almost infinite variety of training scenarios my be created)(col. 6, lines 11-14) are chosen from the group including takeoff and landing at a ground airdrome, takeoff and landing at the aircraft carrier, individual and formation flight, and flight refueling.

Allowable Subject Matter

As per claim 24-29, none of the prior record teaches the combined features of Flight simulator for training in pilotage under the conditions when the pilot receives information on the forecasted possibility of the aircraft encounter with the vortex generator wake vortex danger area and additionally, the flight simulator comprising:

a module (1) for control of the simulator modes capable of choosing a training scenario and controlling operation of the simulator modules,

a training scenarios database module (2)

a module (3) for commutation of the simulator modules,

a module (4) for imitation of outside visual situation, visual part of the air space and ground surface in real time,

a module (6) for simulation of the pilot workplace,

a module (5) for simulation of the aviation instrument panel with indication of the of aircraft engine modes,

a module (8) for simulation of the controls for the aircraft units and systems,

a module (7) for simulation of the ambient parameters,

a module (9) for simulation of the wake vortex situation capable of determining the vortex generator wake vortex path as the set of the vorticity region centers and intensity on the basis of information from the training scenarios database module (2) and of information from the module (7) for simulation of the ambient parameters,

a module (10) for simulation of wake vortex perturbation effects on the aircraft capable of evaluation of the aircraft additional forces and moments induced by the vortex generator wake vortices on the basis of information on the wake vortex path and intensity received from the module (9) for simulation of the wake vortex situation, of information on the aircraft parameters received from the training scenarios database module (2), and of information on the aircraft position, flight velocity, angular rates, and geometrical characteristics received from the module (11) for simulation of the aircraft dynamics,

a module (11) for simulation of the aircraft dynamics capable of forming signals imitating the aircraft forces and moments according to the training scenario, as well as additional forces and moments induced by the vortex generator wake vortices, and transmitting the signals to the module (6) for simulation of the pilot workplace, module (5) for simulation of the aviation instrument panel, and module (4) for imitation of outside visual situation on the basis of information from the module (10) for simulation of wake vortex

perturbation effects on the aircraft, from the training scenarios database module (2), and from the module (8)for simulation of the controls for the aircraft units and systems,

a system for evaluation of the pilot actions capable of estimating correctness of the pilot actions against the flight situation hazardous for the aircraft on the basis of information received from the module (4) for imitation of outside visual situation and the module (5) for simulation of the instrument panel,

a module (17) of parameters of the vortex perturbation danger area comprising:

a unit (20) for evaluation of perturbation hazard capable of estimating the perturbation hazard level at the given point according to the chosen hazard criteria for the aircraft additional aerodynamic forces and moments induced by the vortex perturbations on the basis of information received from unit (16) for determination of the forces and moments, which belongs to the module (10) for simulation of wake vortex perturbation effects on the aircraft;

a unit (21) for determination of danger points where the additional forces and moments induced by the vortex perturbations are dangerous; the unit is capable of determining the coordinates of points belonging to the danger area according the hazard criteria based on information received from the unit (20) for evaluation of perturbation hazard;

a unit (22) for determination of the vortex perturbation danger area capable of calculating the danger area geometrical characteristics on the basis of information received from the unit (21) for determination of danger points and transmitting the corresponding information;

and a warning module (18) comprising:

a unit (23) for selection of the delay time capable of calculating the time period within which the aircraft has at least a possibility of a flight evasive maneuver providing evasion of the aircraft from the generator wake danger area after the signal warning against the possibility of wake encounter has been received;

a unit (24) for simulation of the control plane capable of calculating the delay distance, which equals to the distance covered by the aircraft during the delay time, modeling the control plane situated in front of the aircraft perpendicular to its flight direction at the delay distance, and determining the forecasted time necessary for the aircraft to gain the control plane in the inertial frame;

a forecasting unit (25) capable of determining the generator wake path in the form of the set of the generator vorticity region centers with respect to the inertial frame and of the intensity of the generator wake vortices at the forecasted time on the basis of information from the unit for simulation of wake vortices in the module for simulation of vortex situation;

a unit (26) for calculation of the intersection points capable of determining the coordinates of the intersection points of the generator wake vortex trajectory and the control plane at the forecasted time of the aircraft flight through it;

an areas and regions forming unit (27) capable of forming around the intersection point of the wake vortex path and the control plane of the wake vortex danger area in the form of the set of the generator vorticity danger areas, where the entering aircraft may have the flight parameters exceeding the admissible limits; forming in the control plane of the area of the aircraft forecasted positions at the forecasted time of the aircraft

intersection with the control plane with due regard to the flight regulations; forming around the region of the aircraft forecasted positions of the alert area; the information on the entrance of the wake danger areas into the alert area will be provided to the user;

a transformation unit (28) capable of calculating the coordinates of the area of the aircraft forecasted positions, of the alert area and of the wake vortex danger area in the aircraft frame;

first intersection conditional test unit (29) capable of calculating the distance from the alert area to the wake vortex danger area and marking its nulling;

second intersection conditional test unit (30) capable of calculating the distance from the area of the aircraft forecasted positions to the wake Vortex danger area and marking its nulling,

an indication unit (31) containing at least one indication device capable of indicating the nulling of the distance from the alert area to the generator wake vortex danger area;

an emergency indication unit (32) containing at least one indication device capable of indicating the nulling of the distance from the area of the aircraft forecasted positions to the danger area of the generator wake vortices and said indication device capable of indicating the nulling of the distance from the alert area to the generator wake vortex danger area and said indication device capable of indicating the nulling of the distance from the area of the aircraft forecasted positions to the danger area of the generator wake vortices are chosen from the group containing devices of visual, audio and tactile indication,

a module for simulation of noise, optical and dynamic effects,

a module of visualization including a visualization device capable of forming the image at least of the area of the aircraft forecasted positions and wake vortex danger areas on the basis of information received from the warning module,

a system for evaluation of the pilot actions capable of estimating correctness of the pilot actions against the flight situation hazardous for the aircraft on the basis of information received from the module (4) for imitation of outside visual situation and the module (5) for simulation of the instrument panel.

4. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior record further teaches the simulator system (12) for estimation of the pilot actions comprises a memory device for saving information on the coordinates of the control plane, area of the aircraft forecasted positions and wake vortex danger areas of vortex generators located in the aircraft vicinity at least within the time of emergency indication of the nulling event for the distance from the area of the aircraft forecasted positions to the danger area of the vortex generator wake vortices.

5. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior record further teaches a simulator wherein said module (9) for

simulation of the vortex situation comprises:

a unit (13) for simulation of vortex generator dynamics including the vortex generator tracker capable of receiving information on the vortex generator position, motion parameters, geometrical and weight characteristics from the scenarios database module (2) and the memory unit capable of storing information on the vortex generator position and motion parameters;

a unit (14) for simulation of wake vortices including the wake vortex tracker capable of determining the vortex generator wake vortex path in the form of the set of the vorticity region center trajectories and intensity on the basis of information from the module (7) for simulation of the ambient parameters and module (13) for simulation of vortex generator dynamics and also capable of saving the information on the coordinates of points of the vortex generator wake vortex path in the form of the set of the vorticity region center trajectories and intensity;

and said module (10) for simulation of wake vortex perturbation effects on the aircraft should comprise:

a unit (15) for the aircraft schematization capable of calculating the set of the aircraft geometrical characteristics necessary for calculation of the aircraft additional aerodynamic forces and moments induced by the vortex generator wake vortices on the basis of information on the aircraft type and configuration the training scenario database module (2), and a unit (16) for determination of the above mentioned forces and moments on the basis of the information on the coordinates of points of the vortex generator wake vortex path in the form of the set of the vorticity region center trajectories and intensity saved by the unit (14) for simulation of wake vortices and of

information on the aircraft position, flight velocity, angular rates, and geometrical characteristics received from the module (11) for simulation of the aircraft dynamics.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zeier (US PGPUB 20010041326) discloses a simulator for aircraft flight training .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUINTIN LATHAN JR whose telephone number is (571)270-3846. The examiner can normally be reached on Monday-Thursday Alt-Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Nguyen can be reached on 571-272-1753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QJL

/Taghi T. Arani/
Supervisory Patent Examiner
3/31/2009